

Applic. No.: 10/680,379
Response Dated June 10, 2006
Reply to Office action of March 17, 2006

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-24 remain in the application. Claims 16-24 have been withdrawn.

In item 3 on pages 2-3 of the above-mentioned Office action, claims 1-15 have been rejected as being anticipated by Smayling (US 5,942,374) under 35 U.S.C. § 102(b).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

removing unbounded doping substance from the organic compound after the exposure.

Claim 9 calls for, inter alia:

after the exposure, removing unbounded doping substance from the organic semiconductor to irreversibly fix, in regions of the organic semiconductor adjoining the source contact and the drain contact, the doping substance in the organic semiconductor and to obtain contact regions

Applic. No.: 10/680,379
Response Dated June 10, 2006
Reply to Office action of March 17, 2006

BEST AVAILABLE COPY

adjoining the source contact and the drain contact, the contact regions having increased electrical conductivity.

Smayling discloses a method for doping organic compounds with a dopant. For example in column 5, lines 43-50 of Smaayling, polyimide is doped with diborane. Further, the diborane is _____activated by irradiation (column 6, lines 17-30) and replaces a hydrogen bond within the organic polymer, i.e. it makes the organic polymer conductive, and thus, is irreversibly fixed within the polymer (column 6, lines 1 - 4).

However, Smayling does not disclose that the unbounded doping substance is removed from the organic compound after the exposure, as recited in the instant application. This feature, however, is important for the invention of the instant application. An object of the invention of the instant application is the doping at defined positions, in other words, the exact positional doping. On one hand, there are positions within the semiconductor which should be doped to achieve a higher conductivity, namely the regions in the organic semiconductor between the source electrode and the gate electrode, as well as between the gate electrode and the drain electrode which are both hatched in Figs. 2 and 3 of the instant application and are referred to by numerals 8 and 9, respectively. On the other hand, there are positions in the semiconductor, which are not to be doped. The region which is

Applic. No.: 10/680,379
Response Dated June 10, 2006
Reply to Office action of March 17, 2006

BEST AVAILABLE COPY

located above the gate electrode and which is therefore influenced by the electric field of the gate electrode, the so-called "channel region" referred to by numeral 7 in Fig. 3, should not be doped in order to keep the conductivity low for some applications (see page 6, lines 8-25 of the specification of the instant application). It is therefore important for the invention of the instant application that the original low conductivity in distinct regions, for example in the channel region, is restored.

This object of exact positional doping of the invention of the instant application is achieved by removing the unbounded and unreacted dopant after the doping process, for example, by elevated temperature and reduced pressure. By this measure, the unbounded dopant leaves the conductive organic compound so as to restore the original conductivity resulting in better properties of the semiconductor.

Furthermore, the Examiner has stated in the sentence bridging pages 2 and 3 of the Office action that "the remaining portion of the mask layer" is removed in Smayling (column 10, lines 12-17). However, this removal relates to the mask layer, whereas, in the invention of the instant application, the removal relates to the unbounded dopant, which is still contained in the organic polymer after doping. It is stressed

Applic. No.: 10/680,379
Response Dated June 10, 2006
Reply to Office action of March 17, 2006

~~EST~~ AVAILABLE COPY

that the invention of the instant application does not necessarily need a mask layer; the mask is merely the subject matter of the dependent claim 5 of the instant application.

Claims 1 and 9 are, therefore, believed to be patentable over ~~Smayling and since all of the dependent claims are ultimately~~ dependent on claims 1 or 9, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-15 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to

Applic. No.: 10/680,379
Response Dated June 10, 2006
Reply to Office action of March 17, 2006

the Deposit Account of Lerner Greenberg Stemer LLP, No. 12-
1099.

Respectfully submitted,



Yonghong Chen
Reg. No.: 56,150

YC

June 10, 2006

Lerner Greenberg Stemer LLP
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

Best Available Copy